to process more test samples in a given period of time, thereby increasing the number of patients ~~which~~ that can helped and the revenue stream that emanates therefrom.

Another advantage of the present invention is its ability to search a biologic fluid sample for an optimum region(s) to perform a given test. One of the problems common to analyzing biologic samples is that the concentration of constituents within the sample can vary dramatically. Presently available analysis apparatus accounts for the spectrum of constituent concentrations by performing several test iterations. For example if the constituent population within a particular sample is too great, a second iteration of sample must be created by dilution to decrease the number of constituents in a given volume, or vice-versa. This dilution process increases the analysis time and cost, and the probability of error in the analysis. The present invention, in contrast, avoids multiple dilutions by using a biologic fluid container which can segregate constituents and the concentrations of constituents within a chamber, and by having means to know which constituents are where and in what concentration within the chamber for a given analysis. In addition, the present invention is capable of evaluating regions within the sample containcding within the chamber comparatively to find a sample region having optimum characteristics for the test(s) at hand. In those situations where it is desirable to evaluate the sample statistically, the present invention can be programmed to evaluate a plurality of regions containing acceptable characteristics and that data collectively analyzed.

Another advantage of the present invention is that it provides a safe means to handle biologic samples. The present invention apparatus includes means for safely handling biologic fluid samples during analysis. Risks associated with handling and disposing of biologic fluid samples are consequently minimized.

These and other objects, features and advantages of the present invention will become apparent in light of the detailed description of the best mode embodiment thereof, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 is a diagrammatic view of the present invention apparatus for analyzing a sample of biologic fluid quiescently residing within a chamber.

FIG.2 is a diagrammatic view of a container for holding a biologic fluid sample for analysis.

FIG.3 is a cross-sectional view of the container shown in FIG.2.

FIG.4 is a diagrammatic view of an embodiment of the present invention Reader Module which utilizes fluorescence to produce an image.

FIG.5 is a diagrammatic view of another embodiment of the present invention Reader Module which utilizes fluorescence to produce an image.

FIG.6 is a diagrammatic illustration of a sample field between a first chamber wall and a second chamber wall.

BEST MODE FOR CARRYING OUT THE INVENTION

Referring to FIGS. 1 and 2, the apparatus 10 for analyzing a sample of biologic fluid quiescently residing within a chamber includes a Reader Module 12, a Sample Transport Module 14, and a Programmable Analyzer 16. For purposes of this disclosure the terms "analyze" and "analysis" shall be defined as any examination or evaluation of the fluid sample, including but not limited to, the examination of constituents within the sample. The present invention apparatus 10 is preferably used with a particular container 18 for holding a biologic fluid sample for analysis, which is the subject of ~~co-pending application number ____ (Applicant's Docket Number UFB-006)~~ United States Patent application serial number 09/256,486 and is incorporated herein by reference. Briefly described, the container 18 includes at least one chamber 20, a reservoir 22, a channel 24 (FIG.3) connecting the chamber 20 and the reservoir 22, a valve 26 functionally disposed between the reservoir 22 and the chamber 20, and a label 28. The chamber 20 (see FIG.3) includes a first wall 30 and a transparent second wall 32. In some embodiments, the first wall 30 is also transparent. Fluid

sample residing within the chamber 20 may be imaged through one or both transparent walls 30,32. The container 18 further includes ~~a plurality of~~ one or more features operable to enable the analysis of the biologic fluid. ~~Some of the features are~~ At least one of the features is spatially located within the chamber 20 at a known spatial location., ~~and each has a coordinate address designating its position. Other features~~Features may include physical characteristics (e.g., a particular through-plane thickness at a known spatial location), geometric characteristics (e.g., an object of known volume located at a known spatial location), reagents disposed within the reservoir 22, or a colorant calibration pad 34, etc. The container label 28 stores information ~~which~~ that is communicated to the apparatus 10 through a label reader 38 (FIG.4).

I. The Reader Module

Referring to FIGS. 4 and 5, the Reader Module 12 includes the aforementioned label reader 38, a field illuminator 40, means for determining the volume of a field of the sample, and an image dissector 42. The container label reader 38 is a mechanism for transferring information from the container 18 to the apparatus 10. A practical example of a container label 28 is one which is machine readable and one which is capable of communicating information including, but not limited to: 1) the type of analysis(es) to be performed; 2) information concerning the type of features, and the coordinate addresses of those features located within the sample chamber 20; 3) reagent information; 4) lot information; 5) calibration data; etc. If, for example, the label 28 is a magnetic strip or a bar code strip, then the label reader 38 is a device capable of reading the magnetic strip, the bar code strip, etc. In some instances, it may be possible to store and extract all of the necessary information from the label 28 itself. In other instances where the quantity of information to be communicated is considerable, however, it may be more practical to have the label 28 direct the apparatus 10 to a data file stored within the Programmable Analyzer 16 or stored remotely that contains all the appropriate information. Remotely stored data files can be accessed via modem, dedicated telecommunications line, the internet, wide area network, or other telecommunication means.